

In The Claims

Claims 1-43 (Cancelled)

44. (New) A functional element attachable to a panel in a fluid tight manner, comprising:

a shaft part having a shaft diameter defining a shaft axis;

a head part axially aligned with said shaft part; and

wherein said head part includes an annular wall having an inner surface and an outer surface having a diameter generally equal to said shaft diameter and having a distal end tapered radially inwardly defining an opening having a diameter less than a diameter of said inner surface of said annular wall.

45. (New) A functional element according to claim 44, wherein said distal end defines a generally rounded surface thereby providing a smooth interaction with the panel.

46. (New) A functional element according to claim 44, wherein said annular wall of said head part is deformable radially outwardly thereby forming first and second annular bulges spaced upon opposite sides of the panel.

47. (New) A functional element according to claim 44, wherein said opening defines an opening wall tapering conically inwardly toward said shaft portion.

48. (New) A functional element according to claim 47, wherein said annular wall tapers radially inwardly between generally 30° and 40°.

49. (New) A functional element according to claim 47, wherein said annular wall tapers radially inwardly between generally 45° and 90°.

50. (New) A functional element according to claim 44, wherein said shaft defines a bolt element.

51. (New) A functional element according to claim 44, comprising a nut element.

52. (New) A functional element according to claim 44, comprising a tube section high pressure formed into said head part and said shaft part.

53. (New) A functional element according to claim 44, comprising at least one of a tube section, wire material, and bar stock cold formed into said head part and said shaft part.

54. (New) A functional element and panel assembly forming a fluid tight seal, comprising:

a panel

a shaft part having a shaft diameter defining a shaft axis;

a head part axially aligned with said shaft part; and

wherein said head part includes an annular wall deformably compressed thereby forming a first generally annular bulge and a second generally annular bulge sandwiching at least a portion of said panel therebetween thereby securing said functional element to said panel.

55. (New) The assembly as set forth in claim 52, wherein said panel forms a continuous sheet surrounding said head part of said fastening element.

56. (New) The assembly as set forth in claim 52, wherein said head portion includes a distal end deformed inwardly toward said shaft portion thereby defining a generally concave shape.

57. (New) The assembly as set forth in claim 52, wherein said first generally annular bulge is disposed in a plane generally equal to a plane defined by said panel.

58. (New) The assembly as set forth in claim 52, wherein said first generally annular bulge and said second generally annular bulge define an annular slot and said panel is deformed radially inwardly into said annular slot.

Claims

New independent claim 44 recites a shaft part and a head part axially aligned with the shaft part, wherein the head part includes an annular wall having an inner surface and outer surface having a diameter generally equal to the shaft diameter and having a distal end tapered radially inwardly defining an opening having a diameter less than a diameter of said inner surface of said annular wall. Applicant respectfully submits that neither European Patent Application No. EP 0028019 A1 nor United States Patent No. 5,868,535 show this combination of elements.

The European reference shows a body 1 of a nut having a thin wall cylinder 2. The thin wall cylinder 2 and the body 1 have a common wall defining an identical outside diameter. However, the European '019 patent fails to disclose a head part having a distal end tapered radially inwardly defining an opening having a diameter less than a diameter of an inner surface of the thin wall surface. Therefore, Applicant respectfully submits that new independent claim 44 is patentable over European Patent Application No. EP 0028019 A1.

The Ladouceur '535 patent discloses a fastening element having a fastening portion 28 and a barrel portion 22. The barrel portion 22 includes a wider diameter than the fastening portion 28. Furthermore, the barrel portion 22 does not have a distal end tapered radially inwardly defining an opening having a diameter less than a diameter of an inner surface of the barrel portion. The opening 38 defining the barrel portion 22 includes a frustoconical surface 36 that does not have a diameter less than a diameter of the inner surface of the barrel portion. Therefore, Applicant respectfully submits new independent claim 44 is patentable over United States Patent No. 5,868,535.

New claims 45-53 depend from independent claim 44, and therefore, include each and every element recited in independent claim 44. Accordingly, Applicant respectfully submits new claims 45-53 have also been placed in a condition for allowance.

New independent claim 54 recites a functional element and panel assembly forming a fluid tight seal with a shaft part and a head part, wherein the head part includes an annular wall that is deformably compressed thereby forming a first generally annular bulge and a second generally annular bulge sandwiching at least a portion of the panel therebetween thereby securing the functional element to the panel. In so doing, the head part does not pierce a hole through the panel portion, but merely sandwiches “a portion of said panel” between the first generally annular bulge and the second generally annular bulge. Neither the ‘019 European patent application nor the ‘535 patent to Ladouceur disclose a fastener element and panel assembly where a head part forms first and second annular bulges sandwiching at least a portion of a panel therebetween. Furthermore, by virtue of the opening defined in the panel shown in the ‘019 European patent application and the ‘535 patent to Ladouceur, neither of the assemblies provide a fluid tight seal. Therefore, Applicant respectfully submits that new independent claim 54 has been placed in a condition for allowance over both European Patent Application No. 0028019 A1 and United States Patent No. 5,868,535.

New dependent claims 55-58 depend from independent claim 54, and therefore, include each and every limitation recited in independent claim 54. Accordingly, Applicant respectfully submits that new claims 55-58 have also been placed in a condition for allowance.